



Application No. 10/755,745

AMENDMENTS TO THE SPECIFICATION:

Please replace paragraph [0004] with the following amended paragraph:

In accordance with an aspect of the present invention, a feed system for a phase change ink printer includes a longitudinal feed channel for guiding solid ink sticks along a path ~~form~~ from an insertion point to a melt plate. The surfaces of the feed channel that come into contact with the ink stick are formed of, or coated with, a non-marking material. The non-marking material is a material having a very low surface energy, to which the ink material does not adhere or build up, and/or that readily sheds any ink material that should adhere. Exemplary non-marking materials include tetrafluoroethylene (TFE) fluorocarbon polymers or fluorinated ethylene-propylene (FEP) resins. In a particular embodiment, the surfaces of the feed channel are covered with a film tape of polytetrafluoroethylene (PTFE) or similar material.

Please replace paragraph [0038] with the following amended paragraph:

An exemplary solid ink stick 30 for use in the feed channel with the feed channel guide rail is illustrated in Figures 5 and 6. The ink stick is formed of an ink stick body having a bottom, represented by a general bottom surface 52, a top, represented by a general top surface 54, and at least two lateral extremities or sides, represented by general side surfaces 56. The ink stick is illustrated without the key shapes on the lateral sides that correspond to the key plate openings 24A-D through the key plate 26, to simplify the illustration. The surfaces of the ink stick body need not be flat, nor need they be parallel or

perpendicular to one another. However, these descriptions will aid the reader in visualizing, even though the surfaces may have three dimensional topography, or be angled with respect to one another. The bottom of the ink stick body is a bottom surface having lateral edges 58 at which the bottom surface 52 intersects the lateral side surfaces 56. The ink stick body may be formed in a substantially rectangular block in which the lateral side surfaces 56 are substantially parallel one another. Such a rectangular block form of the ink stick body also includes two end surfaces 60 that are substantially parallel to one another, and are substantially perpendicular to the side surfaces 56. Nevertheless, other shapes of the side and end surfaces are also possible, including curved surfaces. As noted above, the side surfaces 56 may also be shaped with the key shapes to match the keyed openings 24-24A-D through the key plate 26. The lateral side surfaces can also be segmented or stepped, so that one portion of the ink stick body is narrower than another. The ink stick body may be formed by pour molding, compression molding, or other formation techniques.

Please replace paragraph [0065] with the following amended paragraph:

Key element shapes in the lateral side surfaces 156 of the ink stick body may tend to affect the orientation of the ink stick body as the ink stick moves along the feed channel. The interaction of the guide element 166 and the guide rail 140 counteracts that tendency, and maintains the correct orientation of the ink stick in the feed channel. The cooperative action of the ink stick guide element 166 and the feed channel guide rail 140 also reduce the "steering" effect the push block 34 acting on the trailing end surface of the ink stick in the feed channel 128. Thus, laterally offset pressure by the ink block is

of lesser concern, and maintaining a perfect ~~lateral~~lateral balance of the force exerted by the push block on the ink stick is less critical than with certain other designs.

Please replace paragraph [0067] with the following amended paragraph:

Figure 14 illustrates an ink stick 430 in which the bottom surface of the ink stick body is curved, rather than flat. A first lower ink stick guide element 466 is laterally offset to one side of the lateral center of gravity of the ink stick. The first lower ink stick guide element 466 slidably engages a first feed channel guide rail 440 in the lower portion of the feed channel 428. As seen more clearly in the enlarged view of Figure 14C, a non-marking coating 441 covers the portion of the first feed channel guide rail 440 that comes into contact with the first lower ink stick guide element 466 to reduce friction between the first feed channel guide rail and the first lower ink stick guide element. With the particular shape to the bottom surface 452 shown in Figure 14, a second guide element 467 can be formed in the bottom surface of the ink stick body, on the side opposite from the first lower guide element 466. This second lower guide element can be in lieu of, or in addition to, the upper guide element 168 formed in the upper portion of the ink stick body. An ink stick feed channel for receiving an ink stick with such second lower guide element 467 has a second guide rail 448 in the lower portion of the feed channel for slidably engaging the second lower guide element. This second lower guide rail 448 is substantially similar to the first lower guide rail 440. Referring to the enlarged view of Figure 14B, a non-marking coating 461 covers the portion of the second feed channel guide rail 448 that comes into contact with the second lower ink stick guide element 467 to reduce friction between the second feed channel

guide rail and the second lower ink stick guide element. Although the illustration of Figure 14 includes both a second lower ink stick guide element 467 interacting with a second lower feed channel guide rail 448 and an upper ink stick guide element 168 interacting with an upper feed channel guide rail 148 (Figure 14A), in most uses only one of those interactions is needed to guide the ink stick along the feed channel. The ink stick of Figure 14 need not use the second lower guide element 467, using only the upper guide element 168 to balance the interaction between the lower guide element 466 and the feed channel guide rail 440. In such an implementation, the only contact between the lower portion of the ink stick and the feed channel is the contact between the lower guide element 466 and the single feed channel guide rail 440 in the feed channel. In an alternative, the two lower ink stick guide elements 466, 467 each interact with the lower feed channel guide rails 440, 448, and the upper guide rail 148 is eliminated.

Please replace paragraph [0071] with the following amended paragraph:

Figures 18 and 19 illustrate an embodiment of the ink stick 830 in which the surfaces of the ink stick body are curved, and a feed channel 828 for receiving such an ink stick. A first ink stick guide element 866 is formed in portion of the outer surface of the ink stick body, laterally offset from the lateral center of gravity of the ink stick body. The illustrated embodiment does not include edges at which flat surfaces meet. The curved bottom 852 of the ink stick body transitions into the curved sides 856, and the sides transition into the top 854. The ink stick body includes sufficient linear length to provide the first ink stick guide element 866 sufficient length between the ends 860 of the ink stick body to properly guide the ink stick along the feed channel guide rail 840

with non-marking coating 841. The feed channel 828 has a second feed channel guide rail 848 positioned to slidably engage a second ink stick guide element 868. The second ink stick guide element 868 is that portion of the exterior of the ink stick body, such as a section of the side of the ink stick body, that contacts the second feed channel guide rail 868 in response to the tendency of the ink stick body to rotate about the line of interaction between the first ink stick guide element 866 and the first feed channel guide rail 840. A non-marking coating 861 forms the surface of the second feed channel guide rail 848 so that the portion of the exterior of the ink stick body that contacts the second feed channel guide rail actually contacts the non-marking coating. The ink stick can also incorporate a combination of flat surfaces and curved surfaces, so that a wide variety of ink stick shapes are compatible with the present invention.

Please replace paragraph [0079] with the following amended paragraph:

A method of loading an ink stick into a solid ink feed system includes inserting the ink stick through the appropriately shaped keyed opening ~~24 or 124~~24A-D or 124A-D, and into the insertion end of the longitudinal feed channel, as seen in Figures 2, 3, and 10. The first, lower ink stick guide element 66, 166 is aligned with the feed channel guide rail 40, 140 in the ink stick feed channel (see Figures 4 and 13). The ink stick is placed in the channel with the ink stick guide element 66, 166 on the non-marking surface of the feed channel guide rail 40, 140 so that the contact between the ink stick guide element and the feed channel guide rail is substantially the only contact between the bottom surface of the ink stick and the feed system. With the embodiment shown in Figures 9 – 13, when the ink stick body is released into

the feed channel, the gravitational forces cause the upper ink stick guide element 168 of the ink stick body to engage the non-marking surface of the upper feed channel guide rail 148. In accordance with known techniques, the push block 34 in the feed channel pushes the ink stick along the length of the feed channel. For ink sticks similar to the embodiments illustrated in Figures 16 and 17, upon inserting the ink sticks into the insertion end of the feed channel, the user additionally longitudinally aligns the ink stick guide element 666, 766 with the corresponding feed channel guide rail 640, 740.